IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

1. (currently amended) An optical communication apparatus, comprising:

an optical tunable filter, whose wavelength transmission characteristic varies depending on a control signal, transmitting and extracting signal light with a specific wavelength from signal light multiplexed ~~by a~~ using wavelength-division multiplexing (WDM) ~~method~~;

a detection unit detecting signal light extracted by the optical tunable filter; and

a control signal generating unit generating the control signal needed to enable the optical tunable filter to extract signal light with a predetermined wavelength by the detection unit, based on a detected result obtained by ~~shifting~~ scanning a wavelength transmission characteristic of the optical tunable filter ~~in~~ for a range of a wavelength band including all ~~segments~~ of the multiplexed signal light; and wherein the control signal applied to the optical tunable filter for extracting each multiplexed signal light is known for each signal light by the detected result.

2. (previously presented) The optical communication apparatus according to claim 1, wherein said control signal generating unit generates the control signal needed to extract the signal light with a desired wavelength, based on both the detected result and information indicating a current operating situation of the multiplexed signal light.

3. (currently amended) An optical communication apparatus, comprising:

an optical tunable filter, whose wavelength transmission characteristic varies depending on a control signal, transmitting and extracting signal light with a specific wavelength from signal light multiplexed ~~by a~~ using wavelength-division multiplexing (WDM) ~~method~~;

a detection unit detecting signal light extracted by the optical tunable filter;

an operation unit operating to generate information for designating the control signal needed to enable the optical tunable filter to extract signal light with a designated wavelength, based on a detected result of two ~~segments of~~ signal lights at each edge of the wavelength band obtained by ~~the shifting of~~scanning the detection unit when ~~shifting~~ scanning a wavelength

transmission characteristic of the optical tunable filter for a range from outside of a wavelength band including all ~~segments~~ of the multiplexed signal light; and

a control signal generating unit generating the control signal according to the designation information; and wherein the control signal applied to the optical tunable filter for extracting each multiplexed signal light is computed by interpolation operation based on the control signal applied to the optical tunable filter, a wrong extraction of a signal with a different wavelength is avoided when extracting a signal with a desired wavelength.

4. (previously presented) The optical communication apparatus according to claim 3, wherein said operation unit executes the computation, based on both the detected result and information indicating a current operating situation of the multiplexed signal light.

5. (withdrawn) An optical communication system, comprising:

an optical tunable filter, whose wavelength transmission characteristic varies depending on a control signal, transmitting and extracting signal light with a specific wavelength from signal light multiplexed by a wavelength-division multiplexing (WDM) method;

a detection unit detecting signal light extracted by the optical tunable filter;

an optical wavelength detecting unit detecting signal light with a specific wavelength of all segments of signal light extracted by the optical tunable filter;

an operation unit operating to generate information for designating the control signal needed to enable the optical tunable filter to extract signal light with a designated wavelength, based on both a detected result of the detection unit and the optical wavelength detecting unit and information indicating a current operating situation of the multiplexed signal light; and

a control signal generating unit generating the control signal according to the designation information.

6. (withdrawn) An optical communication system, comprising:

an optical tunable filter, whose wavelength transmission characteristic varies depending on a control signal, transmitting and extracting signal light with a specific wavelength from signal light multiplexed by a wavelength-division multiplexing (WDM) method;

a detection unit detecting signal light extracted by the optical tunable filter;

a reference signal light detecting unit detecting reference signal light that is known to be always included in signal light inputted to the optical tunable filter of all segments of signal light extracted by the optical tunable filter;

an operation unit operating to generate information for designating the control signal needed to enable the optical tunable filter to extract signal light with a predetermined wavelength, based on both a detected result of the detection unit and a detected result of the reference signal light detecting unit; and

a control signal generating unit generating the control signal according to the designation information.

7. (withdrawn) The optical communication system according to claim 5, wherein said optical wavelength detecting unit performs the detection of signal light with a specific wavelength of the multiplexed signal light.

8. (withdrawn) The optical communication system according to claim 5, wherein said optical wavelength detecting unit comprises a periodic filter whose free spectrum range (FSR) is the same as a wavelength interval between two segments of adjacent signal light of the multiplexed signal light and whose peak of a wavelength transmission characteristic coincides with a wavelength of the signal light.

9. (withdrawn) The optical communication system according to claim 8, wherein full width at half maximum (FWHM) and finesse of said periodic filter are between 0.1nm and 0.3nm and between 3 and 8, respectively.

10. (withdrawn) The optical communication system according to claim 8, further comprising a control unit controlling a change of wavelength transmission characteristic of said optical tunable filter in such a way as to increase amount of light of signal light that transmits said periodic filter.

11. (withdrawn) An optical communication system, comprising:

an optical tunable filter, whose wavelength transmission characteristic varies depending on a control signal, transmitting and extracting signal light with a specific wavelength from signal light multiplexed by a wavelength-division multiplexing (WDM) method;

an optical wavelength detecting unit detecting signal light with a specific wavelength of all segments of signal light extracted by the optical tunable filter;

an operation unit operating to generate information for designating the control signal needed to enable the optical tunable filter to extract signal light with a predetermined

wavelength, based on both a detected result of the light detection unit and information indicating a current operating state of the multiplexed signal light; and

a control signal generating unit generating the control signal according to the designation information.

12. (withdrawn) The optical communication system according to claim 5, wherein

said optical wavelength detecting unit comprises a periodic filter and

said operation unit operates to generate information for designating the control signal needed to enable the optical tunable filter to extract signal light with a designated wavelength, based on detected results of two segments of signal light at each edge of the wavelength band that is transmitted through the periodic filter and is obtained by shifting when shifting the wavelength transmission characteristic of the optical tunable filter from outside a wavelength band including all segments of the multiplexed signal light.

13. (previously presented) The optical communication apparatus according to claim 3, wherein when receiving no instruction to extract signal light, said operation unit operates to generate in advance the designation information needed to select and extract one arbitrary segment of signal light from the multiplexed signal light, and when receiving the instruction later, said operation unit operates to generate the control signal needed to extract the designated signal light, based on information obtained up to then.

14. (currently amended) The optical communication apparatus according to claim 3, wherein when an~~the~~ instruction to extract signal light is modified, said operation unit operates to generate the designation information needed to extract modified designated signal light, based on information obtained prior to the reception of the modified instruction.

15. (previously presented) The optical communication apparatus according to claim 3, wherein when determining the existence/non-existence of signal light, based on a detected result of said detection unit, said operation unit sets a reference of the determination, based on a signal level detected by said detection unit when a wavelength transmission characteristic of said optical tunable filter is set so that signal light with a wavelength located outside a wavelength band including all segments of the multiplexed signal light can be transmitted.

16. (previously presented) The optical communication apparatus according to claim

15, wherein when determining the existence/non-existence of signal light, based on a detected result of said detection unit, said operation unit determines a target signal not to be signal light if the size of a target signal level is less than the predetermined value.

17. (previously presented) The optical communication apparatus according to claim 16, wherein said operation unit maintains a maximum signal level of signal light detected by the shift of said detection unit when shifting the wavelength transmission characteristic of said optical tunable filter in a range where the size of a target signal level exceeds the predetermined value, and if said detection unit detects the decrease of a signal level from the maximum value by more than a predetermined value when continuing to shift the wavelength transmission characteristic in a predetermined range after detecting the maximum value, said operation unit regards the control signal generated by said control signal generating unit when detecting the maximum value as an optimal control signal to be applied to said optical tunable filter to extract the signal light, and performs the computation.

18. (withdrawn) The optical communication system according to claim 5, wherein when receiving no instruction to extract signal light, said operation unit operates to generate in advance the designation information needed to select and extract one arbitrary segment of signal light from the multiplexed signal light, and when receiving the instruction later, said operation unit operates to generate the control signal needed to extract the designated signal light, based on information obtained up to then.

19. (withdrawn) The optical communication system according to claim 5, wherein when the instruction to extract signal light is modified, said operation unit operates to generate the designation information needed to extract modified designated signal light, based on information obtained prior to the reception of the modified instruction.

20. (withdrawn) The optical communication system according to claim 5, wherein when determining the existence/non-existence of signal light, based on a detected result of said detection unit, said operation unit sets a reference of the determination, based on a signal level detected by said detection unit when a wavelength transmission characteristic of said optical tunable filter is set so that signal light with a wavelength located outside a wavelength band including all segments of the multiplexed signal light can be transmitted.

21. (withdrawn) The optical communication system according to claim 20, wherein when determining the existence/non-existence of signal light, based on a detected result of said detection unit, said operation unit determines a target signal not to be signal light if the size of a target signal level is less than the predetermined value.

22. (withdrawn) The optical communication system according to claim 21, wherein said operation unit maintains a maximum signal level of signal light detected by the shift of said detection unit when shifting the wavelength transmission characteristic of said optical tunable filter in a range where the size of a target signal level exceeds the predetermined value, and if said detection unit detects the decrease of a signal level from the maximum value by more than a predetermined value when continuing to shift the wavelength transmission characteristic in a predetermined range after detecting the maximum value, said operation unit regards the control signal generated by said control signal generating unit when detecting the maximum value as an optimal control signal to be applied to said optical tunable filter to extract the signal light and performs the computation.

23. (currently amended) A method for controlling an optical tunable filter, comprising:

detecting signal light extracted by the optical tunable filter, whose wavelength transmission characteristic varies depending on a control signal, transmitting and extracting signal light with a specific wavelength from signal light multiplexed by ~~a~~ wavelength-division multiplexing (WDM) ~~method~~; and

generating the control signal needed to enable the optical tunable filter to extract signal light with a predetermined wavelength, based on the detected result obtained by scanning~~shifting~~ the wavelength transmission characteristic of the optical tunable filter in a wavelength band including all segments of the multiplexed signal light and wherein the control signal applied to the optical tunable filter for extracting each multiplexed signal light is known for each signal light by the detected result.

24. (currently amended) A method for controlling an optical tunable filter, comprising:

detecting signal light extracted by the optical tunable filter, whose wavelength transmission characteristic varies depending on a control signal, transmitting and extracting signal light with a specific wavelength from signal light multiplexed by ~~a~~ wavelength-division multiplexing (WDM) ~~method~~;

generating information for designating the control signal needed to enable the optical

tunable filter to extract signal light with a designated wavelength, based on a detected result of two segments of signal light at each edge of the wavelength band obtained by the detecting result when scanning~~shifting~~ a wavelength transmission characteristic of the optical tunable filter from outside a wavelength band including all segments of the multiplexed signal light; and

generating the control signal according to the designation information and wherein the control signal applied to the optical tunable filter for extracting each multiplexed signal light is known for each signal light by the detected result.

25. (withdrawn) A method for controlling an optical tunable filter, comprising:

performing the first detection of detecting signal light extracted by the optical tunable filter, whose wavelength transmission characteristic varies depending on a control signal, transmitting and extracting signal light with a specific wavelength from signal light multiplexed by a wavelength-division multiplexing (WDM) method;

performing the second detection of detecting signal light with a specific wavelength of all segments of signal light extracted by the optical tunable filter;

generating information for designating the control signal needed to enable the optical tunable filter to extract signal light with a designated wavelength, based on both the detected results of the first and second detection and information indicating a current operating situation of the multiplexed signal light; and

generating the control signal according to the designation information.

26. (withdrawn) A method for controlling an optical tunable filter, comprising:

detecting signal light extracted by the optical tunable filter, whose wavelength transmission characteristic varies depending on a control signal, transmitting and extracting signal light with a specific wavelength from signal light multiplexed by a wavelength-division multiplexing (WDM) method;

detecting reference signal light that is known to be always included in signal light inputted to the optical tunable filter of all segments of signal light extracted by the optical tunable filter;

generating information for designating the control signal needed to enable the optical tunable filter to extract signal light with a predetermined wavelength, based on both a detected result of the signal light and a detected result of the reference signal light; and

generating the control signal according to the designation information.

27. (currently amended) A method for controlling an optical tunable filter, comprising:

detecting signal light with a specific wavelength of all segments of signal light extracted by the optical tunable filter, whose wavelength transmission characteristic varies depending on a control signal, transmitting and extracting signal light with a specific wavelength from signal light multiplexed by ~~a~~ wavelength-division multiplexing (WDM) ~~method~~;

generating information for designating the control signal needed to enable the optical tunable filter to extract signal light with a predetermined wavelength, based on both the detected result and information indicating a current operating state of the multiplexed signal light; and

generating the control signal according to the designation information and wherein the control signal applied to the optical tunable filter for extracting each multiplexed signal light is known for each signal light by the detected result.

28. (currently amended) An optical communication apparatus, comprising:

an optical tunable filter, whose wavelength transmission characteristic varies depending on a control signal, transmitting and extracting signal light with a specific wavelength from signal light multiplexed by ~~a~~ wavelength-division multiplexing (WDM) ~~method~~;

detection means for detecting signal light extracted by the optical tunable filter ; and

control signal generating means for generating the control signal needed to enable the optical tunable filter to extract signal light with a predetermined wavelength by the detection means, based on a detected result obtained by shifting a wavelength transmission characteristic of the optical tunable filter in a wavelength band including all segments of the multiplexed signal light and wherein the control signal applied to the optical tunable filter for extracting each multiplexed signal light is known for each signal light by the detected result.

29. (currently amended) An optical communication apparatus, comprising:

an optical tunable filter, whose wavelength transmission characteristic varies depending on a control signal, transmitting and extracting signal light with a specific wavelength from signal light multiplexed by ~~a~~ wavelength-division multiplexing (WDM) ~~method~~;

detection means for detecting signal light extracted by the optical tunable filter;

operation means for operating to generate information for designating the control signal needed to enable the optical tunable filter to extract signal light with a designated wavelength, based on a detected result of two segments of signal light at each edge of the wavelength band obtained by scanning~~the shifting~~ of the detection means when shifting a wavelength transmission characteristic of the optical tunable filter from outside a wavelength band including all segments of the multiplexed signal light; and

control signal generating means for generating the control signal according to the designation information and wherein the control signal applied to the optical tunable filter for extracting each multiplexed signal light is known for each signal light by the detected result.

30. (withdrawn) An optical communication system, comprising:

an optical tunable filter, whose wavelength transmission characteristic varies depending on a control signal, transmitting and extracting signal light with a specific wavelength from signal light multiplexed by a wavelength-division multiplexing (WDM) method;

detection means for detecting signal light extracted by the optical tunable filter;

optical wavelength detecting means for detecting signal light with a specific wavelength of all segments of signal light extracted by the optical tunable filter;

operation means for operating to generate information for designating the control signal needed to enable the optical tunable filter to extract signal light with a designated wavelength, based on both a detected result of the detection means and the optical wavelength detecting means and information indicating a current operating situation of the multiplexed signal light; and

control signal generating means for generating the control signal according to the designation information.

31. (withdrawn) An optical communication system, comprising:

an optical tunable filter, whose wavelength transmission characteristic varies depending on a control signal, transmitting and extracting signal light with a specific wavelength from signal light multiplexed by a wavelength-division multiplexing (WDM) method;

detection means for detecting signal light extracted by the optical tunable filter;

reference signal light detecting means for detecting reference signal light that is known to be always included in signal light inputted to the optical tunable filter of all segments of signal light extracted by the optical tunable filter;

operation means for operating to generate information for designating the control signal needed to enable the optical tunable filter to extract signal light with a predetermined wavelength, based on both a detected result of the detection means and a detected result of the reference signal light detecting means; and

control signal generating means for generating the control signal according to the designation information.

32. (withdrawn) An optical communication system, comprising:

an optical tunable filter, whose wavelength transmission characteristic varies depending on a control signal, transmitting and extracting signal light with a specific wavelength from signal light multiplexed by a wavelength-division multiplexing (WDM) method;

optical wavelength detecting means for detecting signal light with a specific wavelength of all segments of signal light extracted by the optical tunable filter;

operation means for operating to generate information for designating the control signal needed to enable the optical tunable filter to extract signal light with a predetermined wavelength, based on both a detected result of the optical detection means and information indicating a current operating state of the multiplexed signal light; and

control signal generating means for generating the control signal according to the designation information.

33. (new) An optical communication apparatus, comprising:

an optical tunable filter for passing a wavelength division multiplexed light signal and having an adjustable wavelength passing range responsive to a range adjustment signal;

a detector detecting the light signal from the filter; and

a control unit producing the adjustment signal adjusting the range of the filter responsive to the light signal detected and a designated wavelength of a wavelength division multiplexed light signal to be extracted.

34. (new) An optical communication method, comprising:

detecting an output light signal from an optical tunable filter for a wavelength division multiplexed light signal and having an adjustable wavelength passing range responsive to a range adjustment signal; and

producing the adjustment signal adjusting the range of the filter responsive to the detected output light signal and a designated wavelength of a wavelength division multiplexed light signal to be extracted.